

## **ENVIRONMENTAL VARIABLES AS DETERMINANTS OF MATHEMATICS CONTINUOUS ASSESSMENT PRACTICE IN SENIOR SECONDARY SCHOOLS IN SOUTH WEST, NIGERIA**

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### **ABSTRACT**

To evaluate the new educational system, one policy that cuts across all educational levels in Nigeria is continuous assessment. To effectively carry out this role, assessment of one kind or the other is prerequisite in a preferred environment. Continuous assessment is an approach which should depict the full range of sources and methods teachers use to gather, interpret and synthesise information about learners, information that is used to help the teachers to understand their learner's plan and monitor instruction and establish a viable classroom culture. This study examined environmental variables as determinants of mathematics continuous assessment practice in senior secondary schools in South West Nigeria. The sample consisted of 300 randomly selected mathematics teachers from South West Nigeria. Data collected was through self constructed questionnaire centred on environmental variables and mathematics continuous assessment practice (cognitive, affective and psychomotor).

Result shows that the continuous assessment practice in the Nigerian school system is cognitive oriented. This shows that only the cognitive is assessed while using number rating for the assessment of affective and psychomotor. It also shows that environment played significant roles in eliciting the interest of students in studying mathematics and for effective practice of continuous assessment. The findings also revealed that most of the schools do not have mathematics laboratory and ICT centres need for continuous assessment and that the students' psychological home environment is not convenient for students' self study in mathematics.

**KEYWORDS:** Environment, Continuous Assessment, Information, Determinants, Cognitive Oriented, Psychomotor, Psychological Home Environment, Convenient

### **INTRODUCTION**

Assessment is a means whereby the teacher obtains information about knowledge gains, behavioural change and other aspect of the development of learners (Ogunneye, 2012). It involves the deliberate effort of the teacher to measure the effect of the instructional process as well as the overall effect of school learning on the behaviour of students. Assessment covers all aspect of school experience both within and outside the classroom. It covers the cognitive as well as the affective and psychomotor aspect of learning.

Desalegn (2004) briefly defined continuous assessment as making observation periodically to find out what a student knows, understands and can do. From Desalegn definition above one can be safe to say that continuous assessment is the record of the students' performance in nearly everything a student does throughout the course / study that the three

interrelated categories of educational domains of learning characterised particular objectives are assessed. In view of these, Desalegn further affirmed continuous assessment as a mechanism whereby the final grading of learner in cognitive (mind), affective (heart) and psychomotor (hand) domains of learning is given due emphasis.

More so, it is equally observed that many emphases are being laid on the generation of scores without taking cognisance of the environment where these scores are being generated and the teachers that generated the scores. Similarly the psychometric property of the tests that produced the scores could not be ascertained. In addition to these, continuous assessment is not actually representing what it should be because the facilities which should create interest in mathematics are not available.

However, it has been observed that implementation of continuous assessment in schools has been fraught with some problems which include the fact that teachers are not adequately educated in continuous assessment implementation, stakeholders are unaware of the importance of continuous assessment as a quality control and assurance tool and the fact that it assists both teachers and students to improve and as such little or no importance is attached to its implementation, thus sufficient funds are not made available for its implementation and continuous assessment storage equipment such as computers are not made available for teachers to use.

Some scholars had discovered that though continuous assessment can make tremendous improvement in student learning and in reducing examination malpractices in schools where it is often practiced yet the operators need to be honest in the discharge of their duties and use the instrument to promote learning among students and enhance teaching by its use in the school system.

Teacher's factor is very critical to improving mathematics continuous assessment so that the assumption that continuous assessment will elicit the interest of students in studying mathematics will be achieved. It is the teacher's responsibility to fashion a learning environment where learning activities are wholly appropriated to achieving the desired learning outcomes. Good teaching that are expected from teachers to be developed, that is; teacher should maintain an attractive and supportive learning environment, creating a safe and orderly environment and use of appropriate teaching aids (MOE, 2009b)

Society expects the teacher to manage the learners and materials in order to effect meaningful interactions leading to optimal student's achievement in mathematics. This is why, in the search for excellence in schools, the environment need to be examined. This suggests that physical, social, psychological, emotional, cultural and supportive classroom environment where the teacher operates, and availability of mathematics laboratory and ICT centre may substantially affect the efficiency in the practice of continuous assessment in mathematics. Hence, for continuous assessment to elicit the interest of students in mathematics so as to improve their performance in the subject environmental variables play a vital role.

Both the physical and the social aspects of a learning environment influence student participation and satisfaction and are believed to affect the learning of the people who function in them (Fulton, 1991). A good school environment is most likely to attract and retain willing and effective teachers. On the other hand a stifling and stultifying school environment is bound to affect the morale and productivity of dedicated teachers, because such environment may be unable to attract and retain hard working teachers. Academic environment stood out as one of the variables that directly influenced attitude to academic work and achievement.

The issue of teaching mathematics within a related good educational environment is deeply with the idea of being facilitator because students need an appropriate environment where they can understand a mathematical knowledge in more active ways than before (Akogu, 2011) most of all, the environment should be able to provide students with many chances of self explanation so that the student can be “less dependent” learner compared to their past education. The major purpose of this study was to investigate the causal effect of environmental variables on mathematics continuous assessment practice in senior secondary schools. Similarly, to also investigate how continuous assessment is being carried out in schools especially in mathematics in relation to the award of scores in cognitive, affective and psychomotor domains.

## RESEARCH HYPOTHESES

The following hypotheses were generated and tested at 0.05 level of significance

**Ho<sub>1</sub>:** Path coefficients of environmental variables and mathematics cognitive continuous assessment practice are not significant.

**Ho<sub>2</sub>:** Path coefficients of environmental variables and mathematics affective continuous assessment practice are not significant.

**Ho<sub>3</sub>:** Path coefficients of environmental variables and mathematics psychomotor continuous assessment practice are not significant.

**Ho<sub>4</sub>:** Path coefficients of environmental variables and mathematics total continuous assessment practice are not significant.

## METHODOLOGY

The study adopted causal- comparative research design to describe the extent to which environmental variables are prior determinants of the mathematics continuous assessment practice in senior secondary schools. Path analytic model was used to decomposed and interpret the linear relationship among environmental variables and continuous assessment. A questionnaire with reliability coefficients of 0.84 and construct validity coefficient of 0.65 was used to collect data on environmental and mathematics continuous assessment. The sample for the study consisted of 300 senior secondary school mathematics teachers. Multi- stage and purposeful random sampling techniques were employed to select Ondo State, Ekiti State and Oyo state. 12 local government areas were selected from the states using purposeful and stratified random sampling techniques. 20 senior secondary schools were selected from each of the states using stratified sampling techniques and 5 mathematics teachers were selected from each of the schools using stratified sampling techniques.

The data collected were analysed using descriptive and inferential statistics. Frequency counts and percentages were used to answer the questions raised. Path analysis was used for the hypotheses. All the hypotheses were tested at 0.05 level of significance

## RESULTS

**Question 1: What are the prevalent environmental variables in the determinant of mathematics continuous assessment practice in schools?**

**Table 1: Frequency Counts and Percentages Showing the Prevalent Environmental Variables in the Determinant of Mathematics Continuous Assessment Practice in Schools?**

|    | Item                                                                                                                     | No   |       | Yes  |      |
|----|--------------------------------------------------------------------------------------------------------------------------|------|-------|------|------|
|    |                                                                                                                          | Freq | %     | Freq | %    |
| 1  | Friendly school environment reduces threat in Mathematics class                                                          | 69   | 23.0  | 231  | 77.0 |
| 2  | Classroom promotes active participation of students' in teaching-learning process                                        | 105  | 35.0  | 195  | 65.0 |
| 3  | The condition of the classrooms in my school is supportive for teaching- learning process                                | 104  | 34.7  | 196  | 66.3 |
| 4  | Mathematical laboratory is available in my school for teaching basic concept of difficult mathematics topics             | 275  | 091.7 | 025  | 8.3  |
| 5  | The use of mathematical laboratory makes the teaching of mathematics real for me                                         | 276  | 92.0  | 024  | 8.0  |
| 6  | School physical environment is conducive for effective assimilation of classroom instruction                             | 61   | 20.3  | 239  | 79.7 |
| 7  | Information and Communication Technology (ICT) is used in my school to simplify the teaching and learning of mathematics | 215  | 71.7  | 065  | 28.3 |
| 8  | ICT update both teachers and students skills centrally                                                                   | 200  | 66.7  | 100  | 33.3 |
| 9  | Student's home environment is suitable enough for private studying                                                       | 237  | 79.0  | 063  | 21.0 |
| 10 | Student's home environment is devoid of distraction and hereby promote self studying in mathematics                      | 236  | 79.3  | 062  | 20.7 |
| 11 | Student's anxiety towards mathematics are detrimental to the learning of the subject                                     | 88   | 29.3  | 212  | 70.7 |
| 12 | Students' negative attitudes toward mathematics influence their performance in the subject                               | 64   | 21.3  | 236  | 78.7 |
| 13 | Poor interpersonal relationship places students at the risk of poor performance in mathematics                           | 77   | 25.7  | 223  | 74.3 |
| 14 | Effective teaching –learning and assessment take place where students manifest high sense of belonging                   | 94   | 31.3  | 206  | 66.7 |
| 15 | Students feel comfortable in an enriched learning- centre social environment                                             | 140  | 46.7  | 160  | 53.3 |
| 16 | School social climate enhance student's acquisition of knowledge and development of cognitive abilities                  | 55   | 18.3  | 245  | 81.7 |

Table 1 showed that the respondents responded positively to ten of the sixteen items ( with the cut off fixed at 50%) any item with a percentage rating 50% and above was regarded as high while any percentage rated below 50% was regarded as low.

#### **Question 2: What is the Continuous Assessment Practice Based on in Secondary Schools?**

**Table 2: Frequency Counts and Percentages Showing what Continuous Assessment Practice in Schools are Based on**

|   | Items: In My School Assessment is Based on; | No   |      | Yes  |      |
|---|---------------------------------------------|------|------|------|------|
|   |                                             | Freq | %    | Freq | %    |
| 1 | Periodic tests only                         | 282  | 94.0 | 018  | 6.0  |
|   | Periodic test plus:                         |      |      |      |      |
| 2 | rating of students' performance             | 15   | 5.0  | 285  | 95.0 |
| 3 | students' assignment scores                 | 69   | 23.0 | 231  | 77.0 |
| 4 | rating of students' interest                | 255  | 85.0 | 045  | 15.0 |
| 5 | rating of students' attitude to Mathematics | 249  | 83.0 | 051  | 17.0 |
| 6 | quality of students' Mathematics notes      | 198  | 66.0 | 102  | 34.0 |

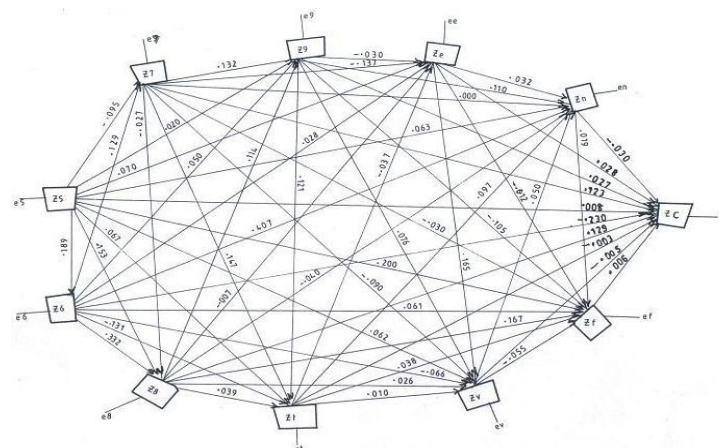
| Table 1: Contd., |                                                          |     |      |     |      |
|------------------|----------------------------------------------------------|-----|------|-----|------|
| 7                | students attendance at Mathematics lesson                | 156 | 52.7 | 142 | 47.3 |
| 8                | students' positive interaction during Mathematics lesson | 236 | 78.7 | 064 | 21.3 |
| 9                | students' project scores                                 | 240 | 80.0 | 060 | 20.0 |
| 10               | students' Mathematical skills                            | 226 | 75.3 | 074 | 24.7 |
| 11               | Student's hand writing                                   | 253 | 84.3 | 047 | 15.7 |
| 12               | Creativity in drawing                                    | 251 | 84.7 | 049 | 16.3 |
| 13               | Handling of mathematical tools                           | 260 | 86.7 | 040 | 13.3 |
| 14               | Scores awarded by the school                             | 236 | 78.3 | 065 | 21.7 |
| 15               | Scores awarded by the teacher                            | 104 | 34.7 | 196 | 65.3 |
| 16               | Scores vetted by the school                              | 239 | 79.7 | 061 | 20.3 |

Table 2 shows that continuous assessment in schools was based on periodic tests plus rating of students' performance, students' assignment scores and scores awarded by the teachers ( with the cut off fixed at 50% and above).

## HYPOTHESES

### Hypothesis 1

Path coefficients of environmental variables and mathematics cognitive continuous assessment practice are not significant. The path model in figure 1 was employed in testing this hypothesis



Source: Author's Design, 2014

Figure 1: Path Model among Environmental Variables and Continuous Assessment (Cognitive)

Table 3: Path Coefficients of Environmental Variables and Mathematics Cognitive Continuous Assessment Practice

| Paths       | Path Coefficients | Decision |
|-------------|-------------------|----------|
| $P_{c5Z_5}$ | .008              | Deleted  |
| $P_{c6Z_6}$ | -.230*            | Retained |
| $P_{c7Z_7}$ | .123*             | Retained |
| $P_{c8Z_8}$ | .124*             | Retained |
| $P_{c9Z_9}$ | .027              | Deleted  |
| $P_{ctZ_t}$ | -.003             | Deleted  |
| $P_{ceZ_e}$ | .028              | Deleted  |
| $P_{cvZ_v}$ | -.005             | Deleted  |
| $P_{cnZ_n}$ | -.030             | Deleted  |
| $P_{cfZ_f}$ | .006              | Deleted  |

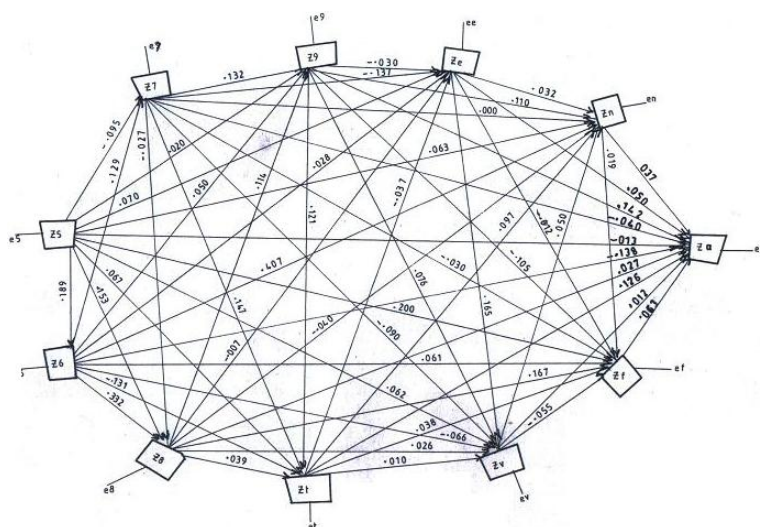
Note: \* = Significant at  $p > .05$

Table 3 shows the paths among the ten environmental variables and cognitive continuous assessment practice. The result from the table shows that classroom environment had path coefficient of (-.230), mathematics laboratory of (.123) and physical environment of (.124), school environment of (-.008), ICT of (.027), home environment of (-.003), Psychological environment of (.028), emotional environment of (-.030) and social environment of (.006). This implies that 3 of the environmental variables had significant causal effects on the assessment of cognitive behaviour in mathematics.

### Hypothesis 2

**Path coefficients of environmental variables and mathematics affective continuous assessment practice are not significant.**

The path model in figure 2 was employed in testing this hypothesis



Source: Author's Design, 2014

**Figure 2: Path Model among Environmental Variables and Continuous Assessment (Affective)**

**Table 4: Path Coefficients of Environmental Variables and Mathematics Affective Continuous Assessment Practice are Not Significant**

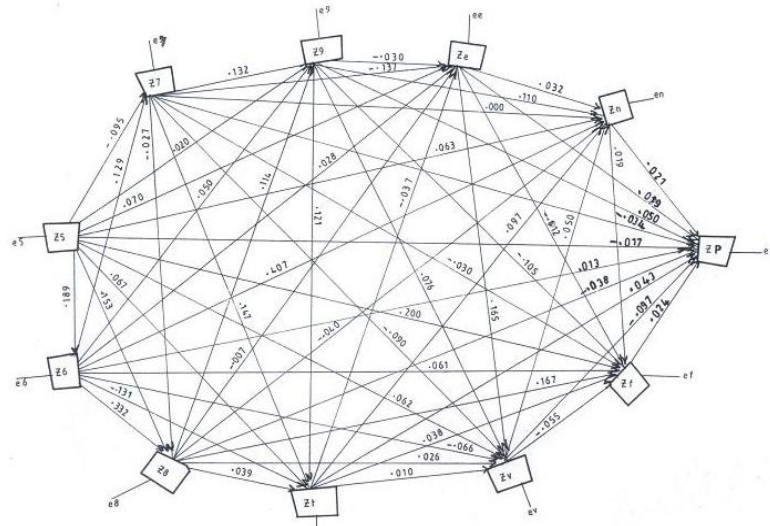
| Paths       | Path Coefficients | Decision |
|-------------|-------------------|----------|
| $P_{a5Z_5}$ | -.013             | Deleted  |
| $P_{a6Z_6}$ | -.138*            | Retained |
| $P_{a7Z_7}$ | -.040             | Deleted  |
| $P_{a8Z_8}$ | -.027             | Deleted  |
| $P_{a9Z_9}$ | .142*             | Retained |
| $P_{atZ_t}$ | .126*             | Retained |
| $P_{ceZ_e}$ | .050*             | Retained |
| $P_{avZ_v}$ | .012              | Deleted  |
| $P_{anZ_n}$ | .037              | Deleted  |
| $P_{afZ_f}$ | .063*             | Retained |

**Note:** \* = Significant at  $p > .05$

Table 4 shows the paths among the environmental variables and affective continuous assessment practice. The result shows that classroom had the paths coefficient of (-.138), ICT of (.050), home environment of (.126) and psychological environment of (.050). Similarly, school environment had path coefficient of (-.013), mathematics laboratory of (-.040), physical environment of (-.027), emotional environment of (.012) and peer group influential environment of

### Hypothesis 3

The path model in figure 3 was employed in testing this hypothesis



**Figure 3: Path Model among Environmental Variables and Continuous Assessment (Psychomotor)**

| Paths                          | Path Coefficients | Decision |
|--------------------------------|-------------------|----------|
| P <sub>p5</sub> Z <sub>5</sub> | -.017             | Deleted  |
| P <sub>p6</sub> Z <sub>6</sub> | .013              | Deleted  |
| P <sub>p7</sub> Z <sub>7</sub> | -.034             | Deleted  |
| P <sub>p8</sub> Z <sub>8</sub> | -.038             | Deleted  |
| P <sub>p9</sub> Z <sub>9</sub> | .050*             | Retained |
| P <sub>pt</sub> Z <sub>t</sub> | .043              | Deleted  |
| P <sub>pe</sub> Z <sub>e</sub> | .019              | Deleted  |
| P <sub>pv</sub> Z <sub>v</sub> | -.097*            | Retained |
| P <sub>pn</sub> Z <sub>n</sub> | .021              | Deleted  |
| P <sub>pf</sub> Z <sub>f</sub> | .024              | Deleted  |

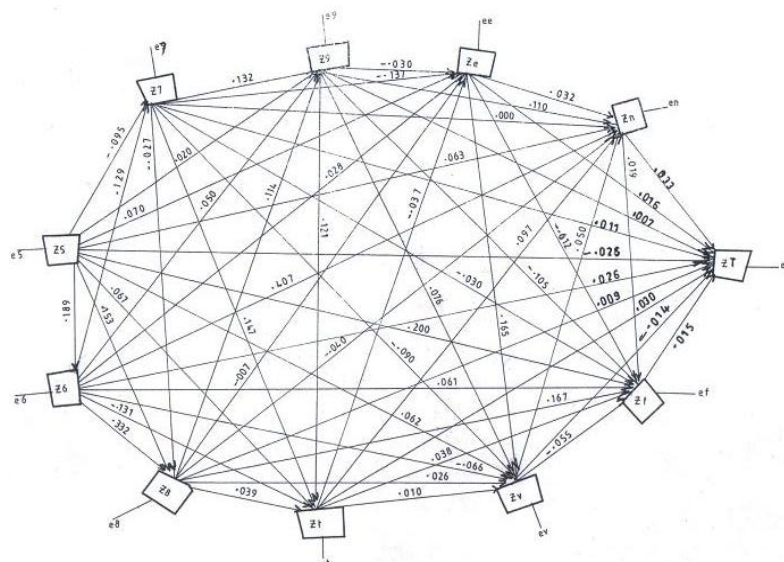
Table 5 shows the paths among environmental variables and psychomotor continuous assessment in mathematics. The result shows that school environment had path coefficient of (-.017), classroom environment of (-.013), mathematics laboratory of (-.034), physical environment of (-.038), ICT of (.050), home environment of (.043), psychological environment of (.019), emotional environment of (-.097), peer group influential environment of (.021) and social environment of (.024). It shows that two of the variables had significant causal effects on the assessment of psychomotor behaviour of the learners in mathematics.



### Hypothesis 4

Path coefficients of environmental variables and mathematics total continuous assessment practice are not significant.

The path model in figure 4 was employed in testing this hypothesis



**Figure 4: Path Model among Environmental Variables and Continuous Assessment (Total)**

**Table 6: Path Coefficients of Environmental Variables and Mathematics Total Continuous Assessment Practice are Not Significant**

| Paths       | Path Coefficients | Decision |
|-------------|-------------------|----------|
| $P_{T5}Z_5$ | -.025             | Deleted  |
| $P_{T6}Z_6$ | .026              | Deleted  |
| $P_{T7}Z_7$ | .011              | Deleted  |
| $P_{T8}Z_8$ | -.009             | Deleted  |
| $P_{T9}Z_9$ | .022              | Deleted  |
| $P_{Tt}Z_t$ | .030              | Deleted  |
| $P_{Te}Z_e$ | .016              | Deleted  |
| $P_{Tv}Z_v$ | -.014             | Deleted  |
| $P_{Tn}Z_n$ | .033              | Deleted  |
| $P_{Tf}Z_f$ | .015              | Deleted  |

**Note:** \* = Significant at  $p > .05$

Table 6 shows paths among environmental variables and mathematics total continuous assessment practice. School environment had path coefficient of (–.025), classroom environment of (.026), mathematics laboratory of (.011), physical environment of (–.009), ICT environment of (.022), home environment of (.030), psychological environment of (–.014), peer group influential environment of (.033) and social environment of (.015). This shows that none of the path coefficients of the environmental variables are significant with continuous assessment total. That is none of the paths had significant causal effects. Hence, the null hypothesis is not rejected.

### DISCUSSIONS

The findings of the study revealed that apart from being competent mathematics teacher, there are other variables that tend to make teaching /learning and assessment successful to aid better performance of students in mathematics.



Environment plays a vital role in mathematics continuous assessment practice in order to elicit the interest of students in studying mathematics and to improve their performance in the subject.

Interaction among people plays some vital roles in the life of individual. This is evident in the way people relate with one another at home, in the school, in the classroom and among peer group. The result supports Seweje and Jegede (2002) that suggested that physical, social and cultural environment in which teacher operates may substantially affect the efficacy of a proved effective teacher. It was discovered from the table that most of the schools do not have mathematics laboratory, ICT centres and the student's psychological home environment are not conducive enough for self studying. Mathematics laboratory lesson provides the students with experience that he / she needs in order to acquire the concept, principle and generalization in mathematics. Oyeniran, (2009) confirmed that the use of mathematics laboratory lesson in mathematics will break down the phobia toward mathematics and provide pleasant and enjoyable experience to learners. ICT facilitates teaching and learning. Adetemirin, (2007) confirmed that ICT provides opportunity of working from home for students and update the skills of both teacher and students centrally.

The findings of the study further revealed that teachers laid emphasis on periodic tests or examination and rating of students' assignment scores as the mean of generating scores. Part of the tools that should be used in the practice of continuous assessment is homework. Orederin and Oloyede (2007) asserted that teacher management of homework and assignment to students have an impact on student's achievement especially when it is well explained, motivational, correlated and reviewed during class time and used as an occasion for feedback to students. Evidence from the study revealed that continuous assessment is based mainly on the assessment of cognitive domain. In order to assess each learner adequately, to discover their latent skills, knowledge and abilities in mathematics; teachers would resort to test at various times and at various locations which aimed at collecting information with respect to the cognitive, affective and psychomotor domains.

The result supports Idowu and Esere (2009) that most of the teachers are familiar with assessment in the cognitive domain alone. Comprehensiveness in continuous assessment is not just about intellectual ability. It is about acquisition of interpersonal skills, about right character, traits, about discipline, about aptitude and skills. All these are to be factored in the overall performance of students and used for guidance and career purposes.

The result of the findings showed that though there are qualified and experienced mathematics teachers in schools yet they do not have an adequate knowledge for the comprehensive assessment of continuous assessment. Abubakar, (2010) confirmed that a good number of teachers are not competent in the implementation of continuous assessment, perhaps due to their inadequate knowledge of its techniques and methodology since the teaching of mathematics should be done to help the learner to see, evaluate and appreciate the beauty and inherent universal usefulness in all sphere of the economy. Egbeyemi (2002) noted that all teachers trained at the inception of the programme have risen to high position and left the assignment of continuous assessment in the hand of relatively inexperienced teachers who have not been formally trained.

It could be seen from the study that continuous assessment being practice in schools are not comprehensive. It simply means that what is being practiced is continuous testing instead of continuous assessment. For successful implementation of the continuous assessment approach, teachers need to give more tests, which mean more marking. They need to observe the learner more keenly to assess their affective outcomes, and there will be more records to be kept on the learners. All these could mean more work to the teacher, more demand on his /her time and more responsibility on

him or her. This mean they must be professionally and attitudinal prepared, experienced and adequate knowledge and receive formal training for operating the system. Similarly, availability of facilities and supportive environment can motivate and generate interest in students to study mathematics and contribute to the efficiency of proved competent teachers. The researcher is of the opinion that if the environment is supportive for learning it will have positive effect on the practice of continuous in schools.

From the result of hypothesis one on the assessment of the mental ability of the students, mathematics laboratory and physical environment had positive significant causal effects. Availability of facilities and supportive classroom environment motivate and generate interest in student to study mathematics and also enable the teacher to carry out any form of assessment enthusiastically. Ukpebor and Omole 2012 confirm that the truth of abstraction is demonstrated in a concrete manner and the students who are slow to comprehend appreciate them readily and become interested in mathematics. Instructional materials can be used to develop self confidence and interest in mathematics and respond promptly to any form of assessment techniques. Classroom environment had negative causal effect to the assessment of the mental ability of the students. The negative causal effect may be as a result of classroom overpopulation, lack of adequate facilities or the general condition of the classroom.

Findings from hypothesis two show that ICT, home environment and psychological environment had positive significant causal effects on the assessment of affective domain of students in mathematics. When the interest of students in mathematics is established through supportive home environment, psychological environment and availability of ICT centres that promotes self studying will make the assessment of the affective possible and easy. Similarly, classroom environment had negative significant causal effect. The negative causal effects may be as a result of the poor condition of the classroom.

More so, the findings on hypothesis three on the assessment of students' manipulative skills in mathematics, ICT had positive significant causal effects while emotional environment had negative significant causal effect. ICT facilitates communication between teacher and students, it also provides students with additional opportunity to write edit and undertake multi-media project. Emotional environment had negative causal effect. If students are not emotionally stable to be able to participate actively in learning activities and perform the task as instructed it will be difficult for the teacher to carry out a keen observation of the manipulative competency of the students.

On the findings on continuous assessment total, none of the variables had direct and significant causal effects on the comprehensive continuous assessment but through cognitive, affective and psychomotor domains.

## CONCLUSIONS

Based on the findings of this study, it is therefore concluded that the practice of continuous assessment in the school system is cognitive assessment oriented. This implies that assessment is based on the mental abilities of the students leaving interest, attitude and mathematical manipulative skills not assessed. Evidence shows that teachers do not use other forms of assessment techniques besides test/ examination and assignment to assess the mental ability leaving non test techniques for affective and psychomotor domains before making decision on students' performance.

It was also discovered that each of the environmental variables had direct or indirect or both effects on the practice of continuous assessment so as to elicit the interest of students in studying mathematics and for better assessment. The result of the study showed that most of the schools do not have mathematics laboratory, ICT centres and supportive

classrooms. Similarly, students' psychological home environments are not conducive for self studying. More so, the path coefficients of process variables, environmental variables and continuous assessment (cognitive, affective and psychomotor) are significant while path coefficients of process variables, environmental variables and continuous assessment total are not significant.

## RECOMMENDATIONS

- Training should be organised for the teachers on comprehensive assessment of continuous assessment (cognitive, affective and psychomotor domains) with the use of various assessment techniques
- Seminar and workshop should be organised for the teachers where they would be taught how to factor affective and psychomotor domains into the overall assessment of the students.
- Environment should also be made conducive enough for teaching and learning as well as for continuous assessment practice so as to elicit the interest of students in studying mathematics.
- ICT centres should be made available in schools to simplify teaching and learning as well as providing opportunity of working from home for students.
- Parent should be encouraged to make home atmospheric condition supportive enough for self studying.
- Adequate materials and facilities necessary for acquisition of skills on the psychomotor domain should be provided in schools
- Affective education should be provided in schools to correct the anti-social behaviour of the students and also observe the learners more keenly to assess their affective outcomes
- Mathematics laboratory should be made available in schools to make the teaching and learning of mathematics practical.

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